

REMARKS

Claims 1-3, 10, and 11, which are in the application, stand rejected under 35 USC 112, first and second paragraphs. Claims 1-3 stand further rejected under 35 USC 103(a) and 35 USC 102(e) or (b) as being unpatentable over Coffindaffer et al. (US 6,335,312). Claims 1-3 stand furthermore rejected under 35 USC 102(b) over Scalia.

Applicant traverses the rejection because the cited references - read without the benefit of the claimed invention - do not repose in the art the sulfuric esters of the claimed invention. Differently put, the construct of the prior art being proposed by the Examiner, would not have been discerned without hindsight analysis based on applicant's disclosure.

Applicant presents hereunder the basis for the rejections, and how they have been overcome or avoided.

The 35 USC 112 First Paragraph Rejection

Claims 1-3, 10, and 11 stand rejected as being indefinite under 35 USC 112 first paragraph on grounds that:

"Claim 1 does not define the individual esters in the mixture. For a claim to be directed to a mixture, it needs to state the members of said mixture. Formula 1 does not exist since sulfur may not contain more than 6 bonds. If one reads the definitions of the variables, a mixture of esters of formula 1 encompasses a large variety of esters which are well known to exist and which are not described in the specification."

The Examiner then continues to state that:

"The process recited in claim 1 will not result in the range of compounds as claimed for the following reasons:

If one reacts the mixture of the three alcohols with sulfonyl chloride, one forms the product where $a+b+c=3$. The claims formula states that $a+b+c=2$. Accordingly, all three of R^1 , R^2 and R^3 may not be present in the claimed product. Additionally since a , b or c may be 2, only one of R^1 , R^2 or R^3 need be present. Applicant may state that the reactants as claimed in the process limitation will produce the claimed mixture."

The Examiner further states the following as a basis for the rejection:

"The structure of claim 1 contains a sulfur atom with 7 bonds, which is not a known state of sulfur. The examiner suggests that applicant write the claim by including all of the structures for the individual esters esters in the mixture."

Finally the Examiner states the following as a basis for the rejection:

"Claim 2 contains a variable p (3-35) that is outside of the scope of the same variable in claim 1 (4-35)"

Statement of How the Rejection Has Been Overcome or Avoided

Applicants traverse the rejection because Claim 1 indeed recites the individual esters in the mixture, which esters are characterized by a, b or c which are identical or different. The alternative expression should be construed to mean esters characterized by a, b, or c, all of which can be present at the same time. As such the structural formula and the description thereof connotes a mixture of esters.

The 35 USC 112, Second Paragraph Rejection

The claims stand rejected as being non-enabled on the grounds that:

"The description in the specification, including example 1, describes a process of forming a mixture of sulfuric acid esters wherein R¹, R² and R³ all are present, which is different from the mixture claimed wherein a+b+c=2, meaning that not all three possible R groups are present on each individual ester in the mixture. Accordingly, since the claimed a, b and c are each 0, 1 or 2 (note integers are claimed) there is no description of forming the products as claimed where in each ester in the mixture, a+b+c=2. Since a, b and c are all present in the reaction mixture, none is equal to zero, resulting in the sulfur atom in at least some of the resultant claimed esters having at least 7 bonds, since there is no provision in the mixture as claimed for the ester wherein the R groups may be a fractional number. The mixture as claimed also provides for mixtures of esters wherein one of the R groups may be 2 and the others zero. For example, there may be two different R¹ groups, and none of either R² or R³. That mixture is not ruled out by the process limitation, and is not enabled by the specification."

Statement of How the Rejection Has Been Overcome or Avoided

Applicants traverse the rejection because the skilled artisan can readily ascertain the claim recited sulfuric ester, and the processes for making and using

the same. More specifically, the skilled artisan would ascertain, as taught by the specification that either a, b, or c can be zero, provided that the sum thereof is 2. Given that there are 3 variables (integers), the sum of which is 2, at least one of the variables would necessarily be zero. As such, the sulfur atom in the representative structural formula would have at most 6 bonds.

While the Examiner would be correct in stating that in instances where either of these variables is 2, the other variables would be zero, this statement would not lead to the conclusion that the R groups per se would be equal to 2. Where either of the variables is 2, the skilled artisan can make and use the mixtures as taught by the specification.

35 USC 102(e) Rejections

The 35 USC 102 rejection is based on the grounds that:

"Coffindaffer et al. discloses the production of mixtures of sulfuric esters from mixtures of C₁₂ and C₁₃ aliphatic alcohols and also the mixtures of alkyl ethoxy sulfates having ethoxylation in the range of 5-9 moles of ethoxylation (col 23 lines 38-47). In col 23, the production of the claimed mixtures of sulfuric esters where a=2, and b and c are each equal to zero, and R¹ is a mixture of aliphatic radicals having 1 to 30 carbon atoms is taught. Beginning in column 23 line 63, a mixture of C₁₂ and C₁₃ alcohols are sulfated, forming a mixture of sulfuric esters wherein one R¹ is equal to an aliphatic radical having 12 carbons and the second R¹ is a radical having 13 carbon atoms. Next Coffindaffer et al. discloses sulfating mixtures of C₁₂ and C₁₃ alcohol ethoxylate (col 24 lines 37 et seq.) The product is then a mixture of two sulfuric esters in which a and c are both 1 and b is zero. In the first ester, R¹ is C₁₂ and R³ is ethylene oxide where p is an integer of 5 to 9 and in the second ester R¹ is C₁₃ and R³ is an integer of 5 to 9.

Accordingly, Coffindaffer et al. discloses several mixtures within the scope of the claimed sulfuric ester mixtures as claimed when a+b+c=2."

Statement of How the Rejection Has Been Overcome or Avoided

Applicants traverse the rejection because a fair reading of the references, including col. 23 and col. 24 cited in support of the rejection does not show a description of the referenced invention in identical terms or terms which would have reposed the same invention in the public domain. Cited col. 23 relates to

preparation of mid-chain branched C12,13 and C14, 15 sodium alcohol sulfate, alcohol ethoxylate and sodium alcohol.

Except for a hindsight construction of the prior art based on Applicants disclosure, one would be pressed to show how Coffindaffer et al. describes the same invention as recited in the claim. Applicants respectfully submit that such a construct of the invention based on Applicants' disclosure cannot support a case for unpatentability.

35 USC 103(a) Rejections

The 35 USC 103(a) rejection is based on the ground that Ascertaining the difference between the Coffindaffer et al. and the claims the Examiner states that:

"Coffindaffer et al. differs from the claimed subject matter because the mixture of esters are not made by the claimed process."

The Examiner however argues that:

"... the process as claimed does not produce the claimed subject matter since it results in a product wherein $a+b+c=3$, and in the claimed mixture $a+b+c=2$."

Statement of How the Rejection Has Been Overcome or Avoided

Applicants traverse the grounds of the rejection because contrary to the Examiner's assertion, the process indeed results in a product wherein $a+b+c=2$. Arguments relating to this aspect of the invention were presented above.

Applicants further traverse the rejection because Coffindaffer et al., read for what it stands, does not provide a basis for modifying the prior art to the claims. Therefore, Coffindaffer et al. would not support a *prima facie* case of unpatentability.

Read for what it stands, Coffindaffer et al. relates to personal cleansing composition, which includes mid-chain branched surfactants. In pertinent parts, the composition comprises:

- (1) conventional personal cleansing additive;
- (2) a surfactant system comprising branched surfactant mixture, said branched surfactant mixture:
 - (a) mid-chain branched and

- (b) linear surfactant compounds;
- (c) wherein the linear compound is less than about 25% by weight of the branched surfactant.

(3) from about 50 to about 99.89% by weight of an aqueous liquid carrier.

The Examiner has not provided a basis for modifying Coffindaffer et al. to the claims with a reasonable expectation of success. Therefore, Coffindaffer et al. would not support a *prima facie* case of obviousness. Applicants for their part note that Coffindaffer et al., as described generally or in the cited col. 23 would have led to the claimed mixtures of sulfuric esters as represented by formula 1.

35 USC 102(b) Rejection

Claims 1-3 are rejected under 35 USC 102(b) as being anticipated by Scalia. The rejection is based on the grounds that:

"Scalia disclosed the mixture of sodium laureth sulphate and myreth sulfate. See Table 1 on page 869. In the first compound, R¹ is C₁₂ and in the second R¹ is C₁₄. In both compounds, R³ is an ethylene oxide polymer. The Examiner notes that Scalia discloses the sodium salts of said esters. Noting the only example in applicant's specification, the claimed sulfuric esters are neutralized with sodium hydroxide immediately after formation, resulting in the sodium salts of the mixed esters."

Statement of How the Rejection Has Been Overcome or Avoided

Here again, Applicants traverse the rejection because it is based on reconstruction of Scalia based on Applicants disclosure. Fairly read, Scalia relates to reversed-phase high-performance liquid chromatographic method for the assay of 1,4-dioxane in sulphated polyoxyethylene alcohol surfactants. The skilled artisan would not have been able to discern therefrom the sulfuric ester of formula 1. Therefore, the claims are not anticipated by Scalia.

In view of the foregoing, Applicant submits that the record does not support a prima facie case of unpatentability. Applicants therefore pray for allowance of the claims in the application.

Respectfully submitted,

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